Ownership matrix	USQ # N/A-4

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1.0 PURPOSE AND SCOPE

(5.1.1, 5.1.2, 5.1.3, 5.1.4,)

The purpose of this standard is to provide requirements for consistent and acceptable performance of an effective occupational noise exposure control and hearing conservation program (HCP). This standard is in accordance with 29 CFR 1910.95, "Occupational Noise Exposure", 29 CFR 1926.52, "Occupational Noise Exposure – Construction", 10 CFR 851, "Worker Health and Safety Program", and ACGIH Threshold Limit Values (TLV) 2016. These requirements aid management and Industrial Hygiene (IH) organizations in anticipating, identifying, evaluating, and controlling occupational noise hazards.

This standard implements ACGIH occupational exposure limits (OEL) for noise and 1910.95 and 1926.52 monitoring and hearing conservation requirements. It applies to all Tank Operations Contractor (TOC) activities performed by Washington River Protection Solutions, LLC (WRPS), its subcontractors, and prime contract workers assigned work in WRPS-owned facilities where there is a potential for worker exposure to High noise levels.

2.0 IMPLEMENTATION

This standard is effective on the date shown in the header.

3.0 STANDARD

3.1 Responsibilities

3.1.1 Noise Subject Matter Expert

Appointed by the industrial hygiene program manager.

- Develops and maintains the TOC Hearing Conservation Program
- Provides technical oversight and interpretation for the program
- Oversees and manages the creation and maintenance of the Worksite Noise Equipment List.
- Approves all hearing protection devices used in TOC operations.
- Reviews audiogram evaluations, HCP training materials and provides updates to the training manager
- Develops noise acceptance criteria for new/rental equipment brought to the worksite, and has signature authority in the electronic system used by WRPS for ordering material, refer to TFC-BSM-CP_CPR-C-06.
- Verifies completeness of the Work Site Equipment List inventory.
- Uses the worksite equipment list to justify appropriate hearing protection controls for workers.

- Collects data in accordance with IHSP-HCNS-03, "Noise Survey of Noise Producers for worksite Equipment List Inventory" and TF-OPS-IHT-019.

3.1.2 Facility/Area Manager

- Implements the noise program at the facility level.
- Identifies noise sources with potential to exceed Occupational Exposure Limit (OEL).
- Requests noise studies to validate suspect noise levels.
- Flows program requirements to line manager.
- Reviews the Work Site Noise Equipment List for accuracy
- Collaborates with IH on noise mitigation efforts.
- Provides equipment or vendor noise data to IH for review and health risk assessment, prior to procurement and/or use.

3.1.3 Line Manager

- Implements the HCP in line organization with assistance from IH.
- Flows down the hearing conservation program requirements to the field Work Supervisor (FWS) and supervisors.
- Identifies workers who have potential for noise exposure at or above the OEL for enrollment in the HCP.
- Provides a selection of suitable hearing protection devices as approved by the Subject Matter Expert (SME).
- Schedules repeat audiograms with the Site Occupational Medical Contractor (SOMC).
- Ensures workers are released from work for follow-up audiograms.
- Completes Employee Job Task Analysis (EJTA) for noise exposure.

3.1.4 Industrial Hygienist

- Assists management with function of the HCP and acts as the Point of Contact (POC) for the project/facility.
- Conducts noise hazard assessments according to TFC-ESHQ-IH-C-69.
- Identifies and evaluates work place noise hazards and/or changes in work activities or equipment that may affect noise exposure.
- Writes sampling plans and strategies for collecting data for documentation in the Work Site Equipment List.
- Communicates results of exposure assessment to management, IH, and workers, as appropriate.

- During IH work planning, assists line managers and planners for the completion Job Hazard Analyses (JHA) and/or other hazard identification processes where workers may be exposed to high noise levels.

- Assists line manager with EJTA preparation, review, and submit for noise exposure.

- Identifies when quantitative measurements are appropriate.

- Identifies the need to collect boundary and/or other relevant noise measurements.

- Serves as a resource for pre-job briefings and other meetings to communicate noise levels and control information.

- Works with the Field Work Supervisor (FWS), line manager, and/or Industrial Hygiene Technicians (IHT) to identify worker exposure groups and to ensure workers are wearing hearing protection per training and manufacturer's specifications.

- Communicates the results of noise exposure assessments to the SME, affected workers, and line manager, as appropriate.

3.1.5 Industrial Hygiene Technician

- Supports the implementation of the HCP through measurement and documentation of noise data.

- Performs noise surveys/studies evaluation and noise levels and demarcation of boundaries, as applicable, and communicates results to the FWS, line manager, IH, and/or workers as requested.

- Identifies the locations that workers are not correctly wearing hearing protection and advises the IH, and FWS.

- Records sound level measurements and field information in the Site Wide Industrial Hygiene Database (SWIHD) as specified by the sampling plan and/or IH.

3.1.6 Field Work Supervisor

- Implements the HCP in the field.

- Verifies that noise controls, such as boundaries, are implemented, and, if hearing protection is required, verifies that hearing protection is worn correctly.

- Works with the IH/IHT to identify workers who will wear noise dosimetry equipment.

3.1.7 Worker's Compensation Administrator

- Reports noise induced injuries in Occupational Safety and Health Administration (OSHA) 300 logs.

- Verifies hearing loss (threshold shift) investigations.

3.1.8 Occupational Medical Contractor

- Maintains a medical surveillance program per 1910.95.

3.1.9 Employee/Worker

- Implements the HCP at the individual level.
- Follows directions regarding the implementation and use of hearing protection.
- Wears hearing protection per training and manufactures recommendations.
- Identifies the need for additional choices in hearing protection to the line manager and IH.
- Participates in the HCP by discussing noise hazards in the current job assignment with the IH/SME.
- Participates in personal exposure sampling.
- Complies with the SOMC requests for repeat audiograms and/or additional evaluations in a timely manner.
- Adheres to SOMC direction prior to their audiogram (i.e., minimal noise exposure fourteen hours prior to test).

3.2 Hearing Conservation Program

Workers are enrolled into the WRPS Hearing Conservation Program when:

- It is discovered that a worker is exposed noise levels at or above 85 dBA as an eight-hour Time Weighted Average (TWA) at their job.
- When the Industrial Hygienist, and/or line manager has good reason to believe a worker is exposed to noise levels at or above 85 dBA as an eight-hour TWA at their present job.
- Audiogram results indicate a STS has occurred.

The worker's line manager is responsible for placing the worker in the hearing conservation program by marking question 9 on "PEH, Part 1" of the workers EJTA as either a "2" or "3", as applicable. This action will also trigger scheduling of the workers baseline audiogram. If the EJTA is being revised because of a work change, and this change will expose the worker to 85 dBA 8-hour TWA or higher, the worker's EJTA is up-dated and baseline audiogram is obtained within 6 months of the worker's first exposure at or above the OEL.

For purposes of the hearing conservation program, worker noise exposures are to be computed in accordance with 2016 ACGIH TLV booklet regarding "Noise and 1910.95 "Appendix A" without regard to attenuation provided by personal protective equipment.

3.2.1 Identification of High Noise

When information indicates that any worker's noise exposure may equal or exceed an 8-hour time-weighted average of 85 decibels, personal monitoring is conducted.

The noise-monitoring program has three functions:

- Identify workers that need to be included in the WRPS hearing conservation program.
- Support the proper selection of worker hearing protection.
- Support the implementation of engineering controls

Representative personal monitoring is appropriate where circumstances such as:

- High worker mobility
- Significant variations in sound level
- Significant component of impulse noise makes area/ personal noise monitoring inappropriate.

Personal and Area Monitoring are conducted according to sample plan IHSP-HCNS-01 – "Characterize Employee High Noise Exposure with Dosimetry" or IHSP-HCNS-02 – "Characterize High Noise Sources and Noise Levels in Work Areas" as directed by the industrial hygienist.

The results of the personal noise monitoring are used to determine if the OEL is exceeded. The calculations to make this determination are conducted according to Section 3.2.

When conducting noise monitoring:

- All continuous, intermittent, and impulse sound levels from 80 decibels to 130 decibels are to be integrated into personal noise measurements.
- Affected workers and/or their representatives are be provided an opportunity to observe any noise measurements conducted.

Personal and area monitoring is repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that:

- Additional workers may be exposed at or above the OEL; or
- Attenuation provided by hearing protection devices used by workers may be rendered inadequate to meet hearing protection device requirements set by this standard.

3.3 Hazard Controls

When noise exposure levels are identified as having the potential to exceed the OEL, noise controls (engineering, administrative and Personal Protective Equipment (PPE)) are implemented to include the following:

- Feasible engineering controls to reduce worker noise exposures to levels below the OEL. The reasons for declaring that engineering controls are not feasible are documented. See Attachment A.
  - Consult the noise SME for recommendations and evaluations of engineering and administrative controls.
- If engineering and/or controls are not feasible to keep noise exposures below the OEL, administrative controls (signs, boundaries, reduced stay times, procedures) are utilized to reduce worker noise exposure to levels below the OEL.
  - Restrict access to areas where measured or anticipated noise levels are above the OEL.
  - Areas where worker exposure is equal to or exceeds an 8-hour TWA of 85 dBA are posted to require hearing protection devices accordingly. Double hearing protection is required for noise levels at or above 100 dBA.
  - Utilization of posting, labeling, and/or barriers follow TFC-ESHQ-S-STD-18. See Figure 1 for examples.

Figure 1. Examples of Posting, Labeling, and/or Barriers.

- Hearing protection is required where engineering controls and administrative controls are not feasible or not adequate to reduce worker noise exposure below 85 dBA 8-Hour TWA. See Attachment A for controls/actions to prevent un-protected noise exposures above 85dBA 8-hour TWA.

3.4 Work Site Equipment List

The Work Site Equipment List is updated on an annual basis by the SME.

The Work Site Equipment List will be populated with existing and new equipment used in TOC operations. The purpose of this worksite equipment list is to identify and document noise levels

of tools/machinery/operations where such noise levels are likely to exceed OEL for noise. The Work Site Equipment list can be accessed at the following link:

http://toc.wrps.rl.gov/rapidweb/IH/index.cfm?pageNum=9

3.5 Employee Notification

Written notification is provided to each affected worker. Such notifications follow requirements specified in TFC-ESHQ-IH-STD-03.

3.6 Hearing Protection Devices

All hearing protection devices are approved by the SME. A variety of approved and suitable hearing protection devices is made available to all workers exposed to an 8-hour time-weighted average of 85 decibels or greater. Hearing protection devices are evaluated by the SME for adequate attenuation according to Section 3.7. To ensure optimal fit and effectiveness, workers are to replace their hearing protection devices as necessary.

Line management is to ensure that hearing protection devices are to be worn by any worker who:

- Is exposed to an 8-hour time-weighted average of 85 decibels or greater, or
- Has experienced an STS.

Line manager provides training in the use and care of all hearing protection devices provided to workers, and ensures proper initial fitting and supervises the correct use of all hearing protectors.

3.7 Hearing Protection Device Attenuation

The SME evaluates the hearing protection device attenuation for environments in which the device is used.

The noise SME conducts the attenuation evaluation from methods described in OSHA 1910.95, Appendix B: “Methods for Estimating the Adequacy of Hearing Protection Attenuation.”

Hearing protection devices must attenuate worker exposure a level below an 8-hour TWA of 85 decibels.

At noise levels of 100 dBA or greater, double hearing protection (plugs and muffs) is utilized to reduce worker noise exposure to levels below the OEL.

The adequacy of the hearing protection device attenuation is re-evaluated whenever worker noise exposures increase to the extent that the selected hearing protection devices may no longer provide adequate attenuation. Workers are provided more effective hearing protection devices, as necessary.

3.8 Training Program

Line manager ensures workers enrolled in the WRPS hearing conservation program attend WRPS hearing conservation training annually.
Hearing conservation training must include the following topics:

- The effects of noise on hearing; 1910.95(k)(3)(ii)
- The purpose of hearing protection devices, the advantages, disadvantages, and attenuation of various types
- Instructions on selection, fitting, use, and care of hearing protection devices
- The purpose of audiometric testing, and an explanation of the test procedure.

3.9 Audiometric Tests

WRPS requires workers in the hearing conservation program to obtain an initial baseline audiogram, and receive an annual audiogram as long as they remain in the hearing conservation program.

The SOMC according to applicable sections of 1910.95, "Occupational Noise Exposure," performs audiometric tests.

Within 6 months of the worker's first noise exposure at or above the OEL, the worker is to receive an initial baseline audiogram. This baseline audiogram is retained for comparison purposes against future audiograms.

Prior to the worker's audiogram (baseline or annual), the worker is to have no exposure to loud noise for at least 14 hours prior to their audiogram. When this is not possible, hearing protection devices may be used as a substitute to achieve the 14 hours period prior to the audiogram.

Line management is to notify/remind their workers of the need to avoid high levels of non-occupational noise exposure for 14-hours immediately preceding the audiometric examination.

3.10 Evaluation of Audiogram

The SOMC is to compare the worker's annual audiogram to their baseline to determine if the new audiogram is valid, and if an STS has occurred.

The SOMC reviews problem audiograms and determines whether there is a need for further evaluation. If further evaluation is needed, the SOMC schedules another appointment for the worker or refers them to a provider outside of the SOMC facility.

A detection of a possible STS is cause for further evaluation.

If the annual audiogram shows the worker has suffered an STS, the SOMC is to inform the worker, their manager, and the noise SME. The line manager schedules a repeat audiogram with SOMC within 30 days of the audiogram in question. The SOMC may consider the results of the retest as the worker's annual audiogram. See Section 3.12.

3.11 Follow-up Procedures

If a comparison of the annual audiogram to the baseline audiogram indicates an STS:

- The SOMC informs the worker, the worker's manager, and the noise SME, within 21 days of the determination.
- The noise SME performs contribution of age (presbycusis) adjustment calculations as found in 1910.95 "Appendix F."
- If the age adjustment calculation confirms a threshold shift:
  - The SME/IH schedules an interview with the affected worker.
- The interview is to include possible exposure audiotrophic chemicals.
  - Requests safety/case manager participation and SOMC to investigate, if the STS is a result of noise and/or audiotrophic chemical exposure at work.
  - The SME sends a report to notify case management and the SOMC of the findings
  - Documentation of the presbycusis calculations, affected worker interview, and results of hearing loss investigations is sent to IH Records Management.

Unless the SOMC determines that the STS is not work related or aggravated by occupational noise exposure, line manager ensures the following steps are taken:

- Workers not using hearing protection devices are fitted with hearing protection devices, trained in their use and care, and required to use them.
- Workers already using hearing protection devices are refitted and retrained in the use of hearing protection devices and provided with hearing protection devices offering greater attenuation if necessary.

3.12 Revised Baseline

An annual or retest audiogram may be substituted for the baseline audiogram when, in the judgment of the SOMC:

- The STS revealed by the audiogram is persistent; or
- The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.

3.13 Audiometric Test Requirements

The SOMC performs the audiometric testing according to applicable requirements found in OSHA 1910.95, "Occupational Noise Exposure."

3.14 Records

The following records are generated during the performance of this standard:

- Noise survey, notification letter and data log
- Audiogram Records
- Presbycusis calculation
- Investigation Report.

The notification letter and data log files are attached to the survey in the SWIHD. When the Industrial Hygienist reviews and completes the survey in SWIHD, a record is generated of the survey, including attachments. This record is then uploaded to IDMS via an automated interface. Audiograms, Prebycusis calculation and Investigation reports are uploaded into IDMS by Industrial Hygiene Records Management.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

4.0 DEFINITIONS

Audiogram. A chart, graph, or table presenting the results from an audiometric test, showing an individual is hearing threshold levels as a function of frequency.

A-Weighted Sound Pressure Level. Sound pressure level measured on the "A" frequency weighting scale of a standard sound level meter. This scale approximates the response of the human ear to noise.

Baseline Audiogram. An audiogram against which future audiograms are compared.

Decibel (dB). Unit for expressing the relative sound pressure level on a logarithmic scale from zero for the average least perceptible sound to about 130 for the average pain level.

Dose (D). The measure of exposure to noise energy with reference to the stated Threshold Limit Value (TLV), calculated in accordance with the ACGIH TLVs. A 100% TLV dose is equivalent to 85 dBA as an eight-hour time-weighted average (85 dBA, eight-hour TWA).
Dose is calculated with this formula TWAeq + 10 log (% D/100) + 85dBA

Exchange Rate. The rate at which an increase in noise level is "exchanged" for decreased exposure time, or conversely, a decrease in noise level is exchanged for a longer exposure time.

Exposure Assessment. The determination of potential and actual exposure to noise, including initial and subsequent qualitative and quantitative exposure assessment activities.

Impulse or Impact Noise. Noise spike/pulse characterized by a sharp rise and rapid decay, in less than 1 second in duration.

Noise (High Noise Level High. Noise, in terms of occupational health standards, is a level equal to or exceeding 85 dBA TWA or an equivalent noise dose.

Noise Reduction Rating (NRR). The amount of attenuation, in dB, provided by hearing protection devices with individual pure tones in a test chamber without echoes or reflections. This number must be adjusted downward in consideration of actual noise exposure situations.

Occupational Exposure Limit (OEL). A term used to represent: (1) the concentration or intensity of a physical, biological, or chemical agent that is allowable, and/or (2) the time period over which workplace concentrations are averaged to compare with the allowable exposure. The OEL is the level at which workers are enrolled in the HCP and the level where noise controls are implemented. WRPS implements the ACGIH OEL established as 85 decibels, A scale for an eight-hour exposure.

OSHA Recordable Threshold Shift. Generally, a threshold shift of 25 dB avg. or more at 2000, 3000, and 4000 Hertz (Hz) when compared with the baseline audiogram.
Standard threshold shift (STS) is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear.

Standard Threshold Shift (STS). A change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear.

Temporary Threshold Shift (TTS). A temporary hearing threshold shift is a threshold shift that is not detected by the follow-up audiogram.

Threshold Limit Value (TLV). The sound level in dBA to which workers may be exposed for a specified duration that will protect most workers against hearing loss over a working lifetime.

Time-Weighted Average (TWA). The average sound pressure level incorporating varying exposure levels weighted by their duration during the work shift.

5.0 SOURCES

5.1 Requirements

5.1.1 10 CFR 851, Section 23, “Safety and Health Standards.”

5.1.2 29 CFR 1910, Subpart G, Section 95, “Occupational Noise Exposure.”

5.1.3 29 CFR 1926, Subpart D, Section 52, “Occupational Noise Exposure.”

5.1.4 “2016 Threshold Limit Values for Noise,” American Conference of Governmental Industrial Hygienists, “Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment.”

5.2 References

5.2.1 ANSI Z535, “Safety Alerting Standards,” American National Standards Institute.

5.2.2 TF-OPS-IHT-019, “Use of the CIRRUS CR: 110AIS Personal Noise Dosimeter Reader Unit and the QUEST 2200 Sound Level Meter.”

5.2.3 TFC-BSM-IRM_DC-C-02, “Records Management.”

5.2.4 TFC-ESHQ-IH-C-46, “Industrial Hygiene Reporting and Records Management.”

5.2.5 TFC-ESHQ-IH-C-69, “Industrial Hygiene Exposure Assessments.”

ATTACHMENT A – CONTROLS/ACTIONS TO PREVENT UNPROTECTED NOISE EXPOSURES ABOVE 85 dBA, 8-HOUR TWA

This attachment includes work activities that WRPS Industrial Hygiene Programs has determined that sufficient WRPS monitoring data is available to allow establishment of default actions and controls applicable to all anticipated instance of those activities.

The work activities are accepted as having sufficient potential to result in 8-hour TWA exposures above 85 dBA. In this event, additional monitoring is not necessary unless the Project/Facility IH has reason to believe new/unmonitored noise exposures are present that may expose workers to noise levels at or above the 8-hour TWA of 85 dBA.

This attachment will be expanded to include additional work activities as sufficient additional exposure monitoring data becomes a part of SWIHD.

Inclusion of this attachment also provides documentation required by Section 3.3 of this document that engineering and administrative controls to reduce worker exposures to below the 8-hour TWA of 85 dBA are not feasible. Therefore, inclusion of a work activity in this attachment means that no separate/further documentation to meet this requirement is necessary.

Mandatory default actions/controls:

- Hearing protection required for workers performing activity and other workers with in 25' of activity.
- EJTA review required to ensure that question 9 on "PEH, Part 1"is marked as either a "2" or "3"
- Training required (see Section 3.8).

Work activities to which mandatory default actions/controls apply to the following:

- Well drilling operations
- Pneumatic tool operations
- Power equipment operation drills, saws, grinders, etc.)
- "Guzzler" truck operation
- Heavy equipment operations (excavators, loaders, graders, etc.).

If a project/facility has noise exposure monitoring data indicating that noise exposures for work activities listed above are below an 8-hour TWA of 85 dBA, an exemption to the mandatory controls required by this attachment maybe granted. That supporting data is submitted to the noise SME for review. If the data verifies that exposures will be below 85dBA, 8-hour TA, the exemption maybe approved.

ATTACHMENT A – CONTROLS/ACTIONS TO PREVENT UNPROTECTED NOISE EXPOSURES ABOVE 85 dBA, 8-HOUR TWA (cont.)

The submitted data includes as a minimum:

- Description of operation, which includes environmental and exposure factors likely to influence noise exposures
- Equipment being used
- Summary of exposure monitoring data.

Upon completion of data review, the WRPS noise SME will notify the requestor via e-mail whether and exemption will be granted.